

# 1.1 Composition of Matter

## I Substances

A. All units of matter are made of matter called Atoms

B. Element - sample of matter that has the same identity for each atom

C. Compounds - made of two or atoms of elements that are combined

1. Substance - materials that are either an element or a compound  
a. cannot be reduced into simpler parts

## II Mixtures - materials made up of two or more substances that can be separated by physical means

A. Heterogeneous mixture - different materials in the mixture can be easily distinguished ex: pizza

B. Solution - (another name for homogeneous mixture)

1. Homogeneous mixture - material where substances are uniformly

spread out

→ see Figure 9-4 p.248  
for examples

c. Colloids - heterogeneous mixture that never settles (like a homogeneous mixture)

→ see Figure 9-5 p.249

a. Difference is that colloids scatter light particles and solutions do not

2. Tyndall Effect - scattering of light particles in a mixture

a. all colloids display the Tyndall Effect

3. Suspension - heterogeneous mixture containing a liquid in which visible particles settle

## 9.2 Coagulation

### Vocabulary words:

Coagulation- process where small, suspended particles

are attracted to each other resulting in a clump of particles that becomes too large to remain suspended

*In other words: where many particles squish to form one large particle*

### Key Concepts:

- Lime and alum form an aluminum hydroxide colloid that is used to help remove finely suspended particles from water supplies
- Exhaust from some industries may be a soot-containing colloid, which can be coagulated by using electricity in the smoke-stacks

### **Give One Take One Prompt:**

What do you know about pollution?

## 9.3 Describing Matter

### I. Physical Properties

A. Examples: color, shape, size, density, melting pt, boiling pt.

B. Physical property- any characteristic of a material that you can observe without changing the make up

of the material

### C. Identification of Properties

- I. the differences in physical properties can be used to separate substances in a mixture

## II. Physical Changes

- A. Identity of the compound does not change
- B. Physical change- change in size, shape, or state of matter
  - I. sometimes indicated by a color change

## III. Chemical Changes

- A. produces a new substance
- B. Chemical change- a change of one substance in a material to a different substance
  - I. Clues to a chemical change include smell, sound, and energy production
- C. Weathering includes both chemical and physical changes

## IV. Chemical properties

- A. Chemical property- characteristic of a substance that indicates whether it can undergo a certain chemical change
  - I. Examples: Flammability, combustibility, etc.

## V. Conservation of Mass

- A. Even though matter goes through a chemical change, the matter's substance is always conserved
  - I. Law of conservation of mass- matter is neither created nor destroyed during a chemical change
    - a. Example: burning log (wood burning)